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REMARKS

Status of Claims

Claims 1-16 and 18-31 are pending. Claims 1-16 and 18-31 have been rejected. Claim 6 has been objected to. Claim 6 has been amended. Claims 1-16 and 18-31 remain for consideration upon entry of the present Amendment. No new matter has been added.

Claim Objections

Claim 6 has been objected to because of improper amendment thereof in the previously filed Office Action response. Language was inadvertently removed from the claim during its amendment and was not indicated. Applicants have accordingly properly amended claim 6.

Claim Rejections – 35 U.S.C. §112

Claim 6 has been rejected under 35 U.S.C. §112, second paragraph. The Examiner asserts that the text “different directional rotational directions” causes the claim to appear incomplete, thereby rendering the claim vague and indefinite.

Applicants believe that the amendments made to claim 6, as indicated above, namely, the recitation that “the passages in adjacent gaps have orientations that adopt different directional rotations...,” addresses the Section 112, second paragraph, issue raised by the Examiner and renders the claim definite.

Claim Rejections – 35 U.S.C. §102

Claims 6, 8, and 22 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,785,620 to Huber (hereinafter “Huber”). The Examiner states that “Huber discloses an apparatus having multiple partitions (Figs. 1a-3c) defining gaps there between; means in each gap including a corrugated strip 6; each strip 6 defining passages wherein the passages in adjacent gaps have orientations that are opposite to each other (Fig.2 and col 2, lines 47-51).”

Huber discloses an apparatus with multiple partitions, and that the gaps thereby formed are of opposite direction. “The lamellas, of which only four are shown accurately and the remainder schematically, are made of sheet metal, and are perforated at spaced apart positions to produce an improved mixing together of the

fluid mediums in the packing element.” (Column 2, lines 43 – 47). “In addition, the corrugations of each lamella are of substantially equal slope and the corrugation of adjacent lamellas are directed so that they intersect.” (Column 2, lines 47 – 51). Because Huber teaches that this arrangement produces improved mixing “in the packing element,” Huber’s intent clearly was to achieve mixing within the packing elements. The channels of Huber are in communication with each other. One skilled in the art would continue to focus on internal mixing within the mixing channels as evidenced by U.S. Patent Application Publication No. US2001/0038576 to Fleischli, et al., now U.S. Patent No. 6,575,617, (hereinafter “Fleischli”) wherein claim 1 recites “...in the presence of a mixing action...”. (Claim 1, lines 5 – 6).

Huber fails to disclose, teach or suggest a mixer/flow conditioner comprising at least three successive partitions defining at least two gaps therebetween, means within each gap defining a plurality of passages wherein the passages in adjacent gaps have orientations that adopt different directional rotations, as recited in Applicant’s amended claim 6. In contrast to Huber, the preferred embodiment of the present invention has a dividing layer between each annular segment to prevent internal mixing or communication and to provide a stable structure to which additional annular segments can be attached. Shortening the length to diameter ratio (L/D) of the channels and orienting the directional channels into a series of annular segments to produce a mixing/flow conditioning environment downstream of the device is clearly not disclosed, taught or suggested by Huber.

Huber further fails to disclose, teach or suggest the arrangement of lamella about a common axis. Huber discloses a representation of his invention comprising four elements oriented in a planar (2-dimensional) relationship to each other. (Figure 2). Such a relationship teaches away from, and is detrimental to, achieving the purposes of the present invention, mixing and flow conditioning. The present invention requires that the elements be oriented about a central axis in order to ~~facilitate mixing and flow conditioning downstream of the device, not in the packing~~ element. A simple planar arrangement will establish two-dimensional vectors (i.e., each containing an X & Y vector, but not a Z vector) which define the two planar flow fields. These flow fields will result in two approximately separate mass flows, ~~one on each side of the flow path. This separation of mass into two directions will not~~ provide good mixing or flow conditioning, as it was not the intention of Huber. Huber’s teaching of the channels cross direction provided means for the mediums to

intersect within the channels. An anticipated result of the Huber device is the continuing intersection of these flows downstream. An intervening inventive and novel step comprised the orientation of intersection channels into concentric annuli. This intervening step between Huber and the present invention occurred during the development of the present invention and was then utilized to build a Swirling Flashback Arrestor (U.S. Patent No. 6,179,608 B1; Filed: May 28, 1991).

Once the intervening inventive step was taken, a Z-axis vector component was added to the flow field. It was learned that orienting the elements about a central axis will produce a swirling flow made up of many tangential vectors. The tangential vectors establish a circumferential flow field corresponding to the annular segment from which it was established. Circumferential flow fields are typically described using a swirl number. Therefore each annular segment could be assigned a local swirl number. A swirl number could also be assigned to the composite flow field that results downstream of the device. The swirling flashback arrestors typically have a swirl number greater than 0.6, in order to achieve vortex breakdown and establish a recirculation region in the core just downstream of the swirler. The mixer/flow conditioner of the present invention seeks to achieve a swirl number of less than about 0.2 by canceling out opposing circumferential flows. The circumferential structural arrangement of the counter-directional concentric segments of the present invention and the associated benefits of such structure on the downstream flow field are not anticipated by the teachings of Huber wherein mixing is achieved by simply crossing flows streams.

To anticipate a claim under 35 U.S.C. §102, a single reference must disclose each and every element of the claimed invention. *Lewmar Marine v. Barient Inc.*, 3 USPQ2d 1766 (Fed. Cir. 1987). Absence from the reference of any claimed element negates anticipation. *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565 (Fed. Cir. 1986). Because Huber fails to disclose, teach, or suggest a mixer/flow conditioner comprising at least three successive partitions defining at least two gaps

therebetween, means within each gap defining a plurality of passages wherein the passages in adjacent gaps have orientations that adopt different directional rotations, as is recited in amended claim 6, Huber does not disclose each and every element of the invention as recited in claim 6. Furthermore, because Huber fails to disclose, teach, or suggest a mixer/flow conditioner comprising at least two partitions defining a gap, at least two corrugated strips positioned in the gap, each strip defining a

plurality of passages, wherein the passages formed by adjacent corrugated strips have orientations that are opposite each other, as is recited in claim 22, Huber also does not disclose each and every element of the invention as recited in claim 22. For at least the foregoing reasons, claims 6 and 22 are not anticipated by Huber.

Dependent claims, by definition, add limitations that further define the subject matter of the independent claims from which they depend. Because claim 8 depends from claim 6, and because claim 6 is believed to be allowable for at least the reasons presented above, claim 8, because it adds limitations that further define the subject matter of independent claim 6, is allowable.

Claims 1-16 and 18-31 have been rejected under 35 U.S.C. 102(e) as being anticipated by Fleischli (as defined above). Applicant respectfully asserts that Fleischli does not qualify as prior art reference under 35 U.S.C. § 102(e) pursuant to the Manual of Patent Examining Procedure (“MPEP”) §§ 706.02(a) through (f). To the best of Applicant’s knowledge, Fleischli carries the critical dates listed in Table 1 below. Comparison data for the present application is listed in Table 2 below.

Table 1: Fleischli Critical Dates

Description	Date
Invention Date	Unknown
Foreign (EP) Application Priority Date	5/8/2000
U.S. Patent Application File Date	5/3/2001
U.S. Patent Application Publication Date	11/8/2001
U.S. Patent Issue Date	6/10/2003

Table 2: Present Application Critical Dates

Description	Date
Invention Date	At least as early as 11/25/1998
U.S. Patent Application File Date	9/25/2001
U.S. Patent Application Publication Date	3/27/2003

Fleischli appears to be a United States Patent Application claiming priority to a foreign application (EP No. 00810391.3), and is not the national phase of an international application filed in accordance with the Patent Cooperation Treaty.

Under this interpretation, Fleischli was filed in the United States after November 29, 2000. Pursuant to MPEP §§ 706.02(a) through (f), and particularly §

706.02(f)(1)(Example 3 and Flowchart I), “No benefit of the filing date of the foreign application is given under 35 U.S.C. 102(e) for prior art purposes.” (Citation omitted). “Thus, a publication and patent of a 35 U.S.C. 11(a) application, which claims benefit under 35 U.S.C. 119(a)-(d) to a prior foreign-filed application (or under 35 U.S.C. 365(a) to an international application), would be accorded its U.S. filing date as its prior art date under 35 U.S.C. 102(e).” In sum, Fleischli would constitute prior art under 35 U.S.C. 102(e) only if it was described in a published patent application “before the invention by the applicant for patent.” (35 U.S.C. § 102(e)(1) and (2)). Because the invention by the applicant is as least as early as November 25, 1998 (evidence provided herewith and discussed below), Fleischli cannot constitute a 35 U.S.C. 102(e) prior art reference having been published on November 8, 2001.

Alternatively, if the corresponding European Patent Application constitutes an international application, the international application was filed before November 29, 2000. “For U.S. application publications of applications that claim the benefit under 35 U.S.C. 120 or 365(c) of an international application filed prior to November 29, 2000, apply the reference under 35 U.S.C. 102(e) as of the actual filing date of the later-filed U.S. application that claimed the benefit of the international application.” (MPEP § 706.02(f)(1)(I)(C)(3)(c)). “References based on international applications that were filed prior to November 29, 2000 are subject to the former version of 35 U.S.C. 102(e).” (MPEP § 706.02(a)(II)). In this case, the invention must have been “described in a patent granted on an application for patent” and such patent would constitute a 35 U.S.C. 102(e) prior art reference. (See 35 U.S.C. 102(e) prior to amendment by American Inventors Protection Act of 1999). Because the invention by the applicant is as least as early as November 25, 1998 (evidence provided herewith and discussed below), Fleischli cannot constitute a 35 U.S.C. 102(e) prior art reference having been issued on June 10, 2003.

Applicant asserts that under either alternative, Fleischli may not be cited as a ~~prior art reference under 35 U.S.C. § 102(e) against the present invention.~~ As evidence of an invention date at least as early as November 25, 1998, Applicant submits herewith a copy of a CONTRACTOR’S PROGRESS REPORT, Contract NAS3-97-013 in which the present invention is illustrated and described as a ~~“Concept,” and further described as a potential “spin-off” application.~~ After diligently reducing the concept to practice, the present application was filed.

Accordingly, the invention date of the present invention is at least as early as November 25, 1998.

As stated above, Fleischli would constitute prior art under 35 U.S.C. 102(e) only if it was described in a published patent application before the invention by the applicant for patent. Thus, Fleischli cannot constitute a 35 U.S.C. 102(e) prior art reference. For at least this reason, claims 1-16 and 18-31 cannot be rejected under Fleischli as prior art under 35 U.S.C. 102(e).

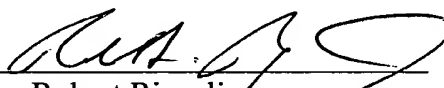
Conclusion

Applicants believe that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein are allowable to Applicants. In view of the foregoing points that distinguish Applicants' invention from those of the prior art and render Applicants' invention novel, Applicants respectfully request that the Examiner reconsider the present application, remove the rejections, and allow the application to issue.

If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is invited to telephone the undersigned.

A check in the amount of \$253.00 is enclosed for the two-month extension fee and for the amended claim 6, which was amended to be an additional independent claim. If additional charges are incurred with respect to this Amendment, they may be charged to Deposit Account No. 13-0235 maintained by Applicants' attorneys.

Respectfully submitted,

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